

Serial No. 10/580,802
Attorney Docket No. 102613-112

REMARKS

By this amendment, claims 1 and 3 have been amended to correct typographical errors. Claim 11 has been amended to depend from claim 1 instead of cancelled claim 9. No claims have been deleted or added. After the Amendment, claims 1-8, 11-24 and 27 are presented for further examination. Applicants submit that no new matter is added herein.

Claim Objections

Claims 1, 3 and 11 were objected to because of various informalities.

By this Amendment, claims 1 and 3 have been amended to correctly spell "oxalic acid." In addition, claim 11 has been amended to depend from claim 1 instead of cancelled claim 9. Applicants respectfully submit that the amendments avoid the objections.

Claim Rejections under 35 USC § 103

Payne et al. (US 5,700,742) in view of North (US 5,352,372)

Claims 1-8, 11-24, and 27 stand rejected as allegedly being obvious over the combined teachings of Payne et al. (U.S. Patent No. 5,700,742) and North (US 5,352,372).

Instant claim 1 is directed to a four component composition for inhibiting the growth of microorganisms on non-cellulosic fibres having a moisture regain of $\leq 5\%$. The composition contains: i) 2-20 wt% of at least a self-crosslinable resin; ii) 0.25-20 wt% of at least a catalyst, iii) 0.1-4% of at least an antimicrobial active agent, reactive with the resin; and iv) 75%-97% of water, wherein components ii) and iii) are selected from Markush groups, and wherein i) + ii) + iii) + iv) = 100%.

The Office Action, at the paragraph bridging pages 4 and 5, recognizes that Payne et al. does not teach an aqueous composition comprising a self-crosslinable resin and poly(hexamethylene biguanide) (hereafter "PHMB"), and a strong organic acid as envisioned by the instant claims. Nonetheless, the Office Action asserts that one of ordinary skill can envisage a composition comprising all 3 components since Payne et al. illustrates two aqueous

Serial No. 10/580,802
Attorney Docket No. 102613-112

compositions, namely formulation 14 in claim 1, col. 7 comprising PHMB and a strong organic acid such as oxalic acid, and formulation P, at col. 10, table 6, comprising melamine and PHMB. It is respectfully believed that the Office Action's reference to claim 1 in this context is an error and intends to refer to table 1.

In response, Applicants respectfully submit that contrary to the assertion of the Office Action, formulation 14 in table 1, col. 7 does not contain PHMB and oxalic acid; and formulation P disclosed at col. 10, table 6 does not contain melamine and PHMB.

Indeed, instead of disclosing compositions containing two components as asserted by the Office Action, Payne et al. discloses three different aqueous compositions, one containing 1% melamine resin (table 6 as well as column 9, lines 44-46), one containing 0.1% PHMB (examples 1-17, column 7, line 6) and one containing 1% of a strong organic acid having a pK value below 4.5.

Specifically, examples 1 to 17 of Payne et al. illustrate the protection against yellowing. The reference discloses:

5 cm² squares of white cotton woven cloth (0.25 parts) were immersed in a 0.1% aqueous solution of PHMB for 5 minutes at 20°-25° C. The cotton was then removed and rinsed thoroughly with water. The treated cotton was then immersed in a 1% aqueous solution of a strong organic acid for 5 minutes at 20°-25° C. and again removed, squeezed and rinsed with water. The cotton pieces were finally immersed in a 3% aqueous solution of sodium hypochlorite at 40° C. for 1 hr. Again the cotton pieces were squeezed and thoroughly rinsed in water before drying.

The colour of these samples was assessed visually by measuring the colour with a Macbeth Reflectance Spectrophotometer. The results are given in Table I below.

Example 18 of Payne et al. illustrates the antimicrobial properties of treated cottons. At column 8, lines 6 and 7, the reference discloses that "[t]he treatment with citric acid, PHMB, and bleach is as described in Example 1." This shows that Example 18 does not disclose any composition containing PHMB and citric acid either.

Example 19 illustrates the durability of the antimicrobial activity to repeated laundering. The reference discloses that the samples were treated as in Example 18. (col. 8, lines 29 and 30).

Serial No. 10/580,802
Attorney Docket No. 102613-112

In example 20, "Example 14 was repeated except that the cotton cloth was replaced by the same amount of a 35/65 cotton/polyethylene glycol terephthalate blend woven piece and the oxalic acid solution was 0.5% by weight." (See col. 8, lines 50-53).

Example 21 discloses

White cotton woven pieces (250 parts) was immersed in a 0.1% aqueous solution of PHMB for 5 minutes at 20° – 25° C. The cotton piece was then removed and rinsed thoroughly with water. The treated cotton was then immersed in 0.5% aqueous solution of oxalic acid for 5 minutes at 20°-25° C. and again removed, squeezed, rinsed with water and dried. The cotton was then padded with a 0.2% solution of a glycoluril resin containing an acid catalyst, squeezed through a pair of nip rollers to give 60% pick-up and finally dried and baked for 10 minutes at 140° C. to cure the resin
..... The results are given in Table 5 below

Similarly, Examples 22 to 24 discloses:

White 35/65 cotton/polyethylene glycol terephthalate woven pieces (250 parts) were immersed in an aqueous solution of 0.4% PHMB for 5 minutes at 20° - 25° C. They were then removed, squeezed, rinsed in water and dried. Half of the pieces were then immersed in a 2% aqueous solution of citric acid for 5 minutes at 20° – 25° C. and again removed, squeezed and rinsed in water.

After drying the treated pieces were padded through a 1% aqueous bath of a curable resin, squeezed between nip rollers to give 60% up take, dried and baked for 10 minutes at 140° C.

The treated fabrics were then immersed in sodium hydrochlorite as described in Example 1. The protection against yellowing conferred by the citric acid is recorded in Table 6 below.

In example 25, Example 15 was repeated except that the PHMB was replaced by the same amount of chlorohexidine digluconate and the strong organic acid used was 0.5% aqueous solution of malonic acid.

Serial No. 10/580,802
Attorney Docket No. 102613-112

In summary, Payne et al. does not disclose any composition containing either PHMB and an organic acid or a composition containing melamine and PHMB in any of the examples 1-25. Indeed, nowhere else does the reference disclose such compositions.

Further, Applicants respectfully submit that Payne et al. not only fails to expressly disclose any two components or three components composition as suggested by the Office Action, but also implicitly teaches away from using a composition containing biguanide and organic acid to treat textile materials.

Specifically, Payne et al. relates to the treatment of textile materials with biguanide and a strong organic acid having a pK value below 4.5. See Abstract. According to Payne et al., the biguanide is applied to the textile material before the strong organic acid is applied. See column 6, lines 8 and 9. The patentee discloses that at least some of the biguanide groups of the antimicrobial active bind with the textile material; and those not required to bind with the textile are blocked by the strong organic acid, i.e., forming a salt of the biguanide and the acid. See column 6, line 36-43. Accordingly, there would not be any biguanide groups left to react with chlorine contained in many commercial detergents, thus protecting the biguanide treated materials against yellowing and the loss of antimicrobial activity associated with the reaction between the biguanide and the chlorine. See column 1, lines 20-23.

Based on this teaching, a person of ordinary skill in the art would sequentially applying a first composition containing biguanide and a second composition containing organic acid to the textile material, as illustrated by all the examples of Payne et al. The reason is that one skilled in the art would know that if one mixes PHMB and the organic acid before applying them to the textile material, the organic acid would react with PHMB and block the biguanide groups on the PHMB. As a result, the antimicrobial material would not be able to bind with the textile material, which is against the purpose of the Payne et al.

Further, even if one skilled in the art did combine PHMB, organic aid and melamine into one composition, Applicants submit that he would not, the obtained composition does not disclose or suggest the instantly claimed composition because the obtained composition would contain 1% of a resin, which falls outside of the claimed range of 2-20 wt%.

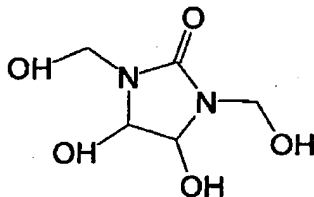
Serial No. 10/580,802
Attorney Docket No. 102613-112

In this regard, the Office Action relied upon North for the missed teaching. North discloses a composition for treating textile fabrics which reduces or eliminates free formaldehyde in the resin and the treated fabric which providing a non-yellowing treated fabric comprising DMDHEU or alkylated DMDHEU and dimethyl acetoacetamide. See Summary of the invention. According to North, the use of dimethyl acetoacetamide reduces formaldehyde levels both in the DMDHEU resin and in the finished treated fabric.

Applicants submit that there is no motivation to combine Payne et al. and North. Further, the combination of Payne et al. and North does not disclose or suggest the composition as recited in instant claim 1. Rather the combination would suggest a composition containing dimethyl acetoacetamide, which the instantly claimed invention does not contain.

In particular, as discussed above, North teaches that it is dimethyl acetoacetamide that reduces formaldehyde levels in the DMDHEU resin and in the finished treated fabric. Accordingly, if skilled the artisan add DMDHEU to the composition disclosed in Payne et al., one would also include dimethyl acetoacetamide in the composition for the purpose of reducing the level of formaldehyde of DMDHEU resin and the treated fabric.

The structure of dimethyl acetoacetamide is represented below:



As shown in the structure, dimethyl acetoacetamide is not a self-crosslinkable polymer, namely, component (i) recited in the instant claims. It does not fall under the definition for components (ii), (iii) and (iv) as recited in the claims either. Accordingly, the combination of Payne et al. and North does not disclose or suggest instantly claimed composition because the combination suggest a composition that contains dimethyl acetoacetamide, which the claimed composition does not contain.

Serial No. 10/580,802
Attorney Docket No. 102613-112

For at the least the same reasons discussed above, the combination of Payne et al. and North does not disclose or suggest the compositions as recited in instant claims 2-8, 11, 12 and 27.

Instant claims 13-18 are directed to a method for inhibiting the growth of microorganisms on non-cellulosic fibres having a moisture regain of $\leq 5\%$ or having an acid value of ≤ 5 mmol/kg by using the instantly claimed composition.

Since neither Payne et al., nor North, either alone or in combination, disclose or suggest the compositions as recited in claims 1 and 3 for the reasons discussed above, the reference does not disclose or suggest any method for using these compositions, much less those as recited in instant claims 13-18.

Instant claims 19-24 are directed to non-cellulosic fibres having a moisture regain of $\leq 5\%$ and/or having an acid value of ≤ 5 mmol/kg comprising: 1-10 wt% by weight of the non-cellulosic fibres of at least a self-crosslinkable resin being a formaldehyde condensate with urea or melamine; and 0.1 to 1 wt% by weight of the non-cellulosic fibres of at least an antimicrobial active agent selected from a Markush group, *reacted with the resin*.

Payne et al. and North, either alone or in combination, fail to disclose or suggest the use of formaldehyde condensate with urea or melamine for any purposes. Accordingly the cited references do not disclose or suggest any fibres comprising such resins, much less the non-cellulosic fibres as recited in the instantly claims 19-24. For the above reasons, Applicants respectfully submit that the 103 rejections based on Payne et al. in view of North are untenable and should be withdrawn.

It is believed that the instant claims are now in condition for allowance. Accordingly, an early receipt of a Notice of Allowance is respectfully requested.

If the Examiner has any questions or believes that a discussion with Applicants' attorney would expedite prosecution, the Examiner is invited and encouraged to contact the undersigned at the telephone number below.

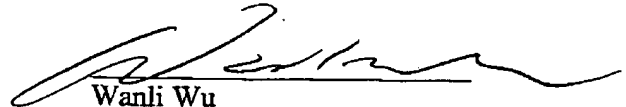
Serial No. 10/580,802
Attorney Docket No. 102613-112

Please apply any credits or charge any deficiencies to our Deposit Account No. 23-1665.

Respectfully submitted,
John D. Payne et al.

Date: May 13, 2010

WIGGIN and DANA LLP
One Century Tower
New Haven, CT 06508-1832
Telephone: (203) 498-4317
Facsimile: (203) 782-288
www@wiggin.com


Wanli Wu
Reg. No. 59,045

12800\601\2352902.1